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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,345	04/07/2004	Ping-Lin Kuo	08688.0339US01	8124
23552 7590 10/29/2007 MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER HAILEY, PATRICIA L	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 10/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/820,345

Applicant(s)

KUO ET AL.

Examiner

Patricia L. Hailey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicants' remarks and amendments, filed on August 20, 2007, have been carefully considered. No claims have been canceled; new claims 16-20 have been added.

Claims 1-20 are now pending in this application.

Withdrawn Rejections

The 102(b) rejection of claims 1-15 as being anticipated by Yamauchi et al. (U. S. Patent No. 3,988,288) stated in the previous Office Action has been withdrawn in view of Applicants' persuasive arguments traversing this rejection.

The 102(b) rejection of claims 1-15 as being anticipated by Ohnishi et al. (U. S. Patent No. 5,747,599) stated in the previous Office Action has been withdrawn in view of Applicants' persuasive arguments traversing this rejection.

New Ground of Rejection

The following New Ground of Rejection is being made in view of Applicants' amendments to claims 1, 5, and 9, in view of the addition of new claims 16-20, and in view of the newly discovered reference to Mullin (U. S. Patent No. 3,326,827); the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

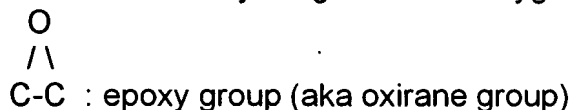
1. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Mullin (U. S. Patent No. 3,326,827).

Mullin teaches an epoxide-treated titanium dioxide pigment (col. 1, lines 10-15), said epoxide selected from the group consisting of epoxidized esters of fatty acids and epoxy intermediates, said esters being selected from the group of esterified fatty acids having from 1-18 carbon chain length esterified with alcohols of from 1-10 carbon chain length. See col. 2, lines 33-44 of Mullin, as well as col. 2, lines 10-25, which discloses the formation of epoxy intermediates. This disclosure is considered to read upon the "epoxy compound having a general formula" as recited in **claims 1, 5, 9, and 16**.

Application of the epoxide to the TiO₂ pigment may be effected in any one of several ways, such as dissolving the epoxide in a suitable solvent to form a thin epoxide solution, and then either add the pigment to the epoxide solution to form a slurry (or, as an alternative, spray the epoxide solution onto the pigment), after which the treated pigment is dried to volatilize the solvent, followed by dry milling, to insure a uniform coating of the epoxide on the discrete particles of pigment. See col. 3, lines 22-58 of Mullin. This disclosure is considered to read upon **claims 13-15 and 20**.

Epoxides included within those described above will have oxirane oxygens in the range of 2-9% by weight, which corresponds to an epoxy equivalent weight range of 178-800:

For 9% by weight oxirane oxygens:



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Number of epoxy groups (and number of oxirane oxygens) = X

$$X(16)/MW = 0.09$$

$$16X = 0.09MW$$

$$X = 0.005625MW$$

$$EEW = MW/X$$

$$EEW = MW/0.005625MW$$

$$EEW = 178$$

And, for 2% by weight oxirane oxygens:



C-C : epoxy group (aka oxirane group)

Number of epoxy groups (and number of oxirane oxygens) = X

$$X(16)/MW = 0.02$$

$$16X = 0.02MW$$

$$X = 0.00125MW$$

$$EEW = MW/X$$

$$EEW = MW/0.00125MW$$

$$EEW = 800$$

See col. 3, lines 59-66 of Mullin; this disclosure is considered to read upon **claims 2, 6, 10, and 17.**

Exemplary epoxides include alkyl esters (i.e., methyl, ethyl, and acetyl esters) of tall oil fatty acids, polyepoxides, diepoxide polymers, and glycidyl polyethers. See col. 3, line 67 to col. 4, line 4 of Mullin; this disclosure is considered to read upon **claims 3, 4, 7, 8, 11, 12, 18 and 19.**

The epoxide-treated pigments of Mullin have "the unique effect of improving the dispersibility of the pigment... as well as enhancing the color of a polyvinyl resin made therefrom." See col. 4, lines 5-13 of Mullin, as well as col. 5, lines 15-67, which

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discloses exemplary tests for dispersing the epoxide coated pigments. This disclosure is considered to read upon the claim limitations "pigment dispersion" and "dispersing agent" in **claim 5**.

In view of these teachings, Mullin anticipates claims 1-20.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-

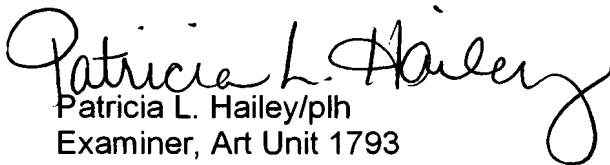
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1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Patricia L. Hailey/plh
Examiner, Art Unit 1793
October 25, 2007


J. A. LORENGO
SUPERVISORY PATENT EXAMINER